

Hoover Dam Bypass



A faint background map showing the Hoover Dam and Lake Mead. The map includes labels for 'Lake Mead', 'Hoover Dam', 'American Indian Reservations', 'Colorado River', and 'Nevada'.

Hoover Dam Bypass Project

Lead Agency:

Federal Highway Administration
Central Federal Lands Highway Division

Stakeholders:

Arizona DOT
Nevada DOT
NPS/LMNRA
BOR
WAPA

Design Consultant:

HDR Engineering
Jacobs-Sverdrup
T.Y. Lin International

Contact:

F. Dave Zanetell P.E.
720-963-3737

A faint, stylized map of the Hoover Dam area serves as the background. It shows the Colorado River flowing from the bottom left towards the top right. The Hoover Dam is depicted as a large, curved structure across the river. Labels on the map include 'Colorado River' along the bottom left, 'HOOVER DAM' on the dam structure, and 'Lake Mead' at the top. Other smaller labels like 'Arrow Point' and 'North Point' are also visible.

Hoover Dam Bypass Project

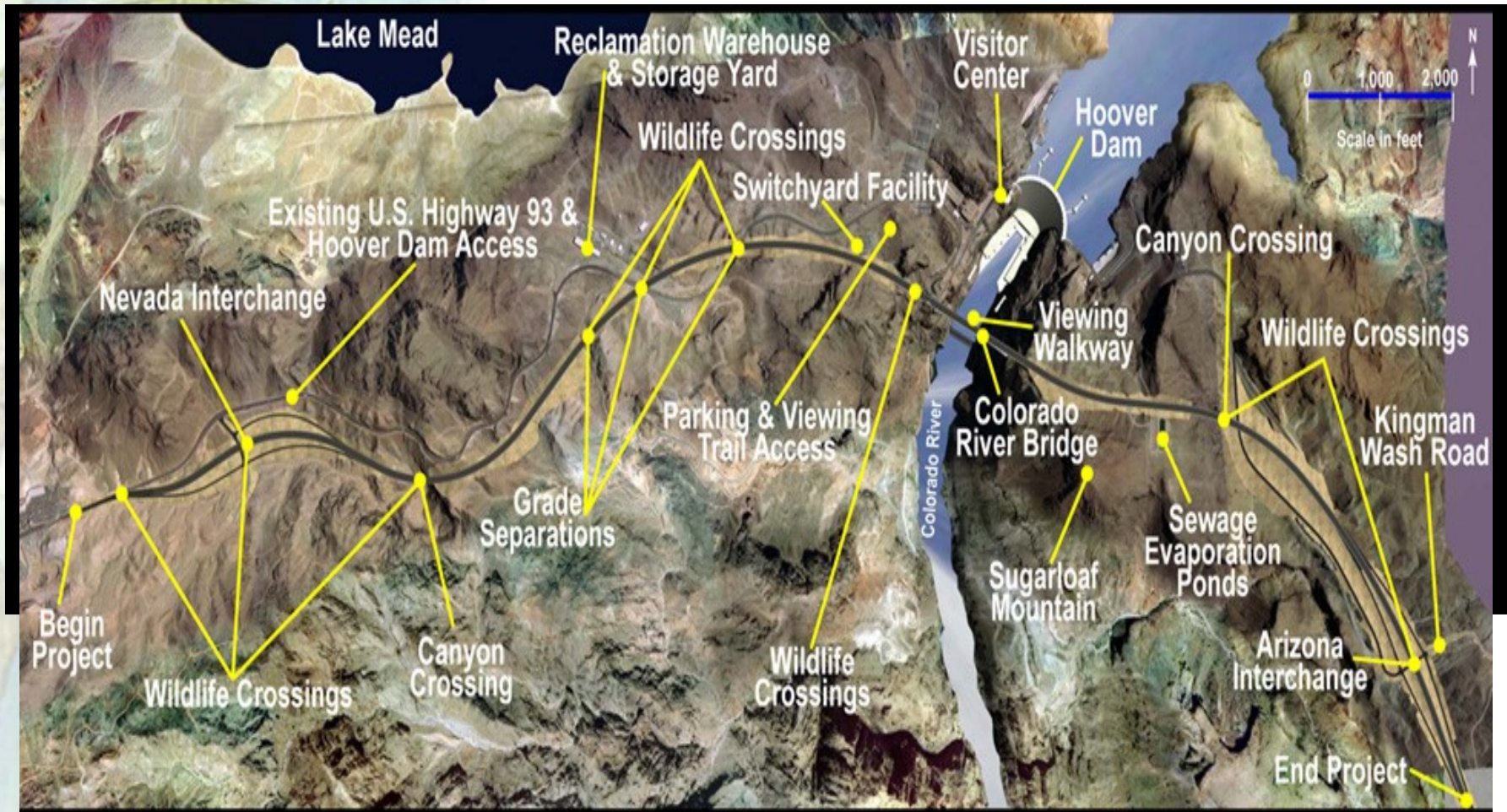
Construction Status

Contracting Environment

Risk Allocation Strategies

Sharing of Lessons

The Bypass Project and Phasing



Composite Arch







WAPA transmission line and powerhouse relocations

- *All complete \$10 million*
- *Aggressive schedule including reconfigurations at powerhouse, double circuiting to eliminate river crossings, and removal of the A&N switchyard*
- *Contracts closed—good job WAPA*

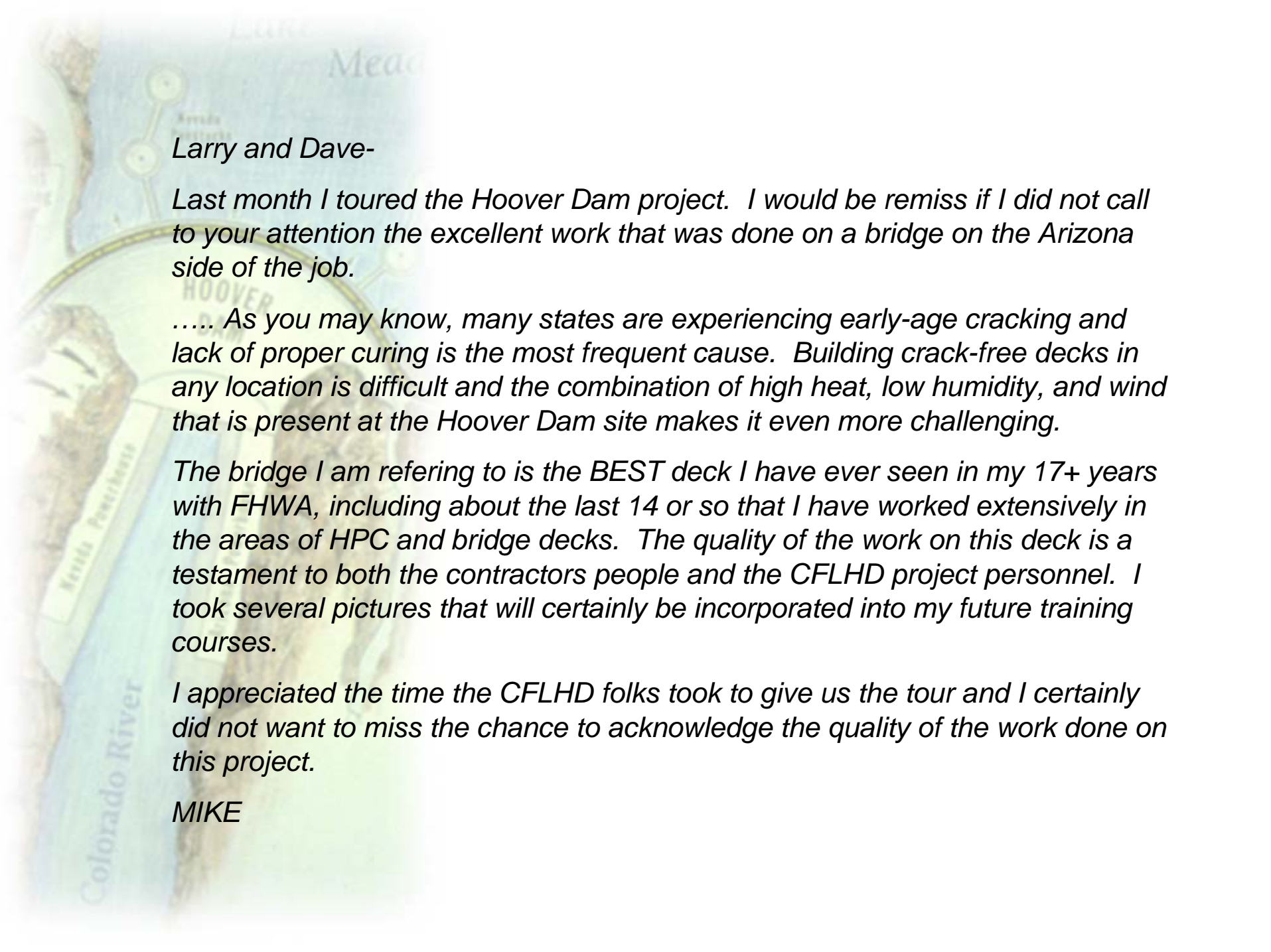












Larry and Dave-

Last month I toured the Hoover Dam project. I would be remiss if I did not call to your attention the excellent work that was done on a bridge on the Arizona side of the job.

..... As you may know, many states are experiencing early-age cracking and lack of proper curing is the most frequent cause. Building crack-free decks in any location is difficult and the combination of high heat, low humidity, and wind that is present at the Hoover Dam site makes it even more challenging.

The bridge I am referring to is the BEST deck I have ever seen in my 17+ years with FHWA, including about the last 14 or so that I have worked extensively in the areas of HPC and bridge decks. The quality of the work on this deck is a testament to both the contractors people and the CFLHD project personnel. I took several pictures that will certainly be incorporated into my future training courses.

I appreciated the time the CFLHD folks took to give us the tour and I certainly did not want to miss the chance to acknowledge the quality of the work done on this project.

MIKE

A faint, stylized map of Lake Mead and the Hoover Dam is visible in the background. The map shows the Colorado River flowing into the lake, with the dam structure and surrounding terrain depicted. Labels like 'Lake Mead', 'Hoover Dam', and 'Colorado River' are visible in a light, semi-transparent font.

Arizona Approach

- *\$21.5 million contract - R. E. Monks / Vastco Joint Venture*
- *100% complete*
- *Outstanding quality from Contractor Team*
- *Traffic on interim US 93 until bypass complete*









Nevada Approach Progress

- ***Contract Awarded to Edward Kraemer & Sons, Inc. on September 17, 2003.....\$30,144,444***
- ***Complete Nov 2005 -tough job***
- ***Maintained Quality Standards- Good Job***
- ***Resolving a few issues to close out***



Thanks !!!

- R. E. Monks / Vastco Joint Venture & subs/suppliers
- *Edward Kraemer and Sons & subs/suppliers*

Colorado River Bridge

- *Bids Received September 16 2004*
- *Four bidders (Edward Kraemer / Taisei JV; PKS/Flatiron JV; Obayashi / Mitsubishi; Traylor Pacific)*
- *\$114 million low bid -- Obayashi / Mitsubishi*
- *A + B contract with 40 month bid. June 2008 completion*
- *Allowable Duration was 36-48 months*
- *Contract includes steel price adjustment clause*
 - *No adjustment if material index varies < 10% capped 50%*
 - *Adjusts both positive and negative*
 - *Based on raw material indexes (heavy melt and scrap)*
- *Awarded Oct 22, 2004*
- *Onsite Notice to Proceed January 31, 2005*
- ***\$35 million earned to date – OUT OF THE GROUND!***





JUN 21 2005









JUN 15 2005





Final Closeout

- *Paving contract to complete bypass estimated at \$15.5M*
- *Programmatic Estimates remains \$234 million*
- *Bypass on schedule for completion in mid-late 2008.*

Erection Sequence





Goals and Constraints

- ◆ ***World Class Facility !!!***
- ◆ ***Fixed budget – one time commitment***
- ◆ ***Quality - - throughout***
- ◆ ***On-time completion***
- ◆ ***Use incremental funding as an advantage***

A faint, stylized map of the Hoover Dam area serves as the background. It shows the Colorado River, Lake Mead, and the Hoover Dam structure. Labels include 'Lake Mead', 'Hoover Dam', 'Colorado River', 'Nevada', 'Arizona', 'Boulder Dam', and 'Armed Forces'.

Background on Big Bridges

- ◆ ***Typically w/o competition 1-2 bidders***
- ◆ ***Low bid often grossly exceeds estimate***
- ◆ ***Timely completions are rare***
- ◆ ***Cost overruns frequent***
- ◆ ***Owners often surprised technically on bid day***
- ◆ ***Litigation often follows***



Conclusions and Strategies

- ◆ ***Typically w/o competition 1-2 bidders***
 - ◆ ***Understand and allocate risks***
 - ◆ ***Rely on sureties and industry to qualify***
 - ◆ ***Don't over "mega" the atmosphere***
- ◆ ***Low bid often grossly exceeds estimate***
 - ◆ ***Result of first, second, and third tier sole source agreements***
 - ◆ ***Owners not engaging industry in development***
 - ◆ ***Pre-qualifying may be counter productive or redundant***
- ◆ ***Timely completions are rare***
 - ◆ ***Gross technical changes are frequent***
 - ◆ ***Overruns limit fiscal capabilities***

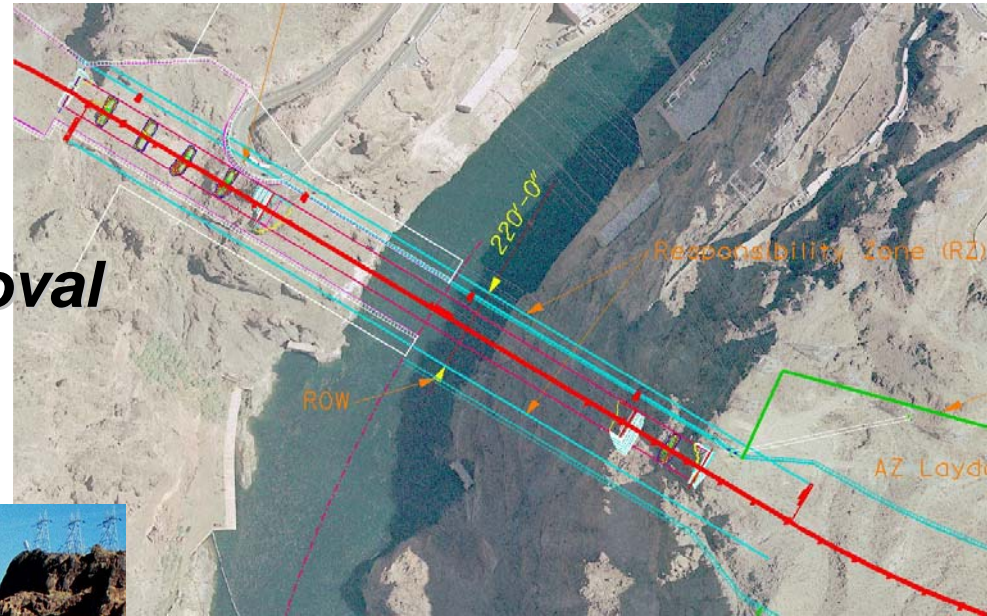


Conclusions and Strategies continued

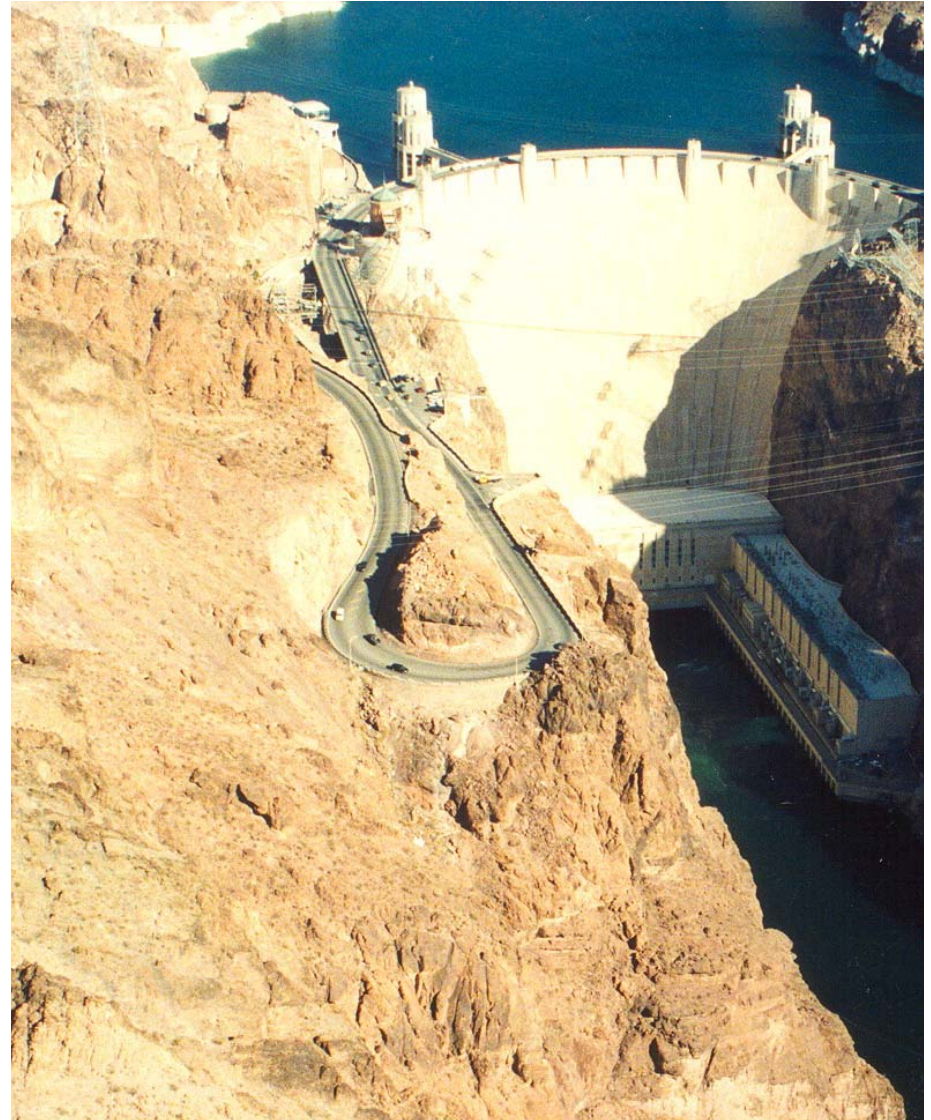
- ◆ ***Cost overruns frequent***
 - ◆ ***solutions and remedy for potential contractual risks not included in contract***
 - ◆ ***Lack of bid day competition leverage exaserbated on modifications***
- ◆ ***Owners often surprised technically on bid day***
 - ◆ ***Bid day is to late to find out that risks are to great or technically restrictive***
- ◆ ***Litigation often follows***

Challenge- Excavation and Containment

- **Responsibility Zone**
- **Containment Rqmts**
- **Scaling and Feature Removal**
- **Excavations**



Challenge - Switch-Back Access



Challenge - Columns

➤ **Precast Alternative**

➤ **Precast yard**

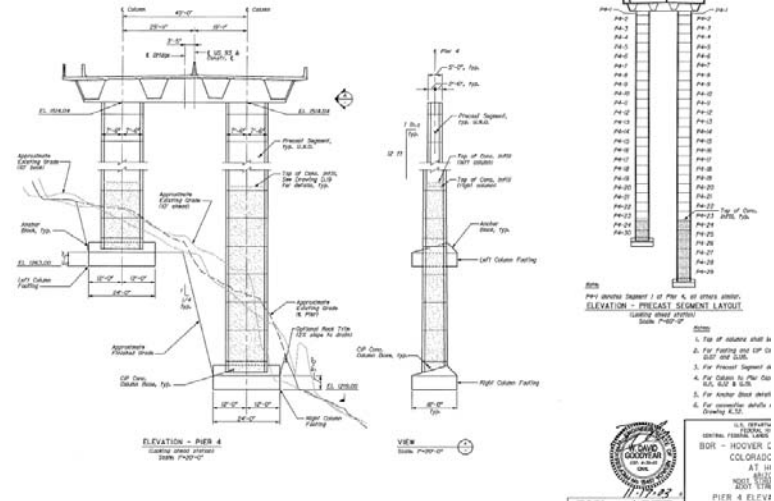
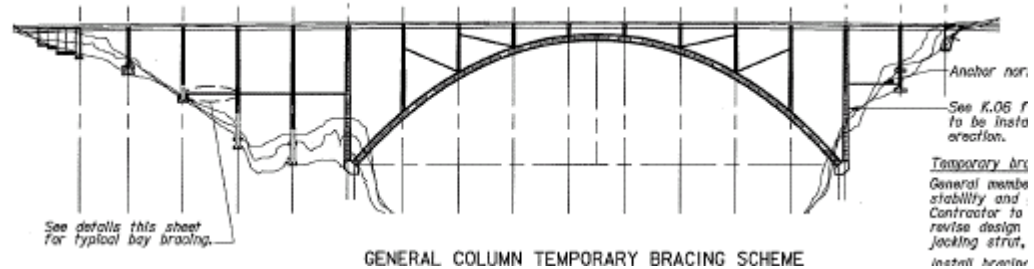
- **Short line system**
- **Long line system**

➤ Crane Erection

- **Geometry Control**
- **Epoxy and Grouting**

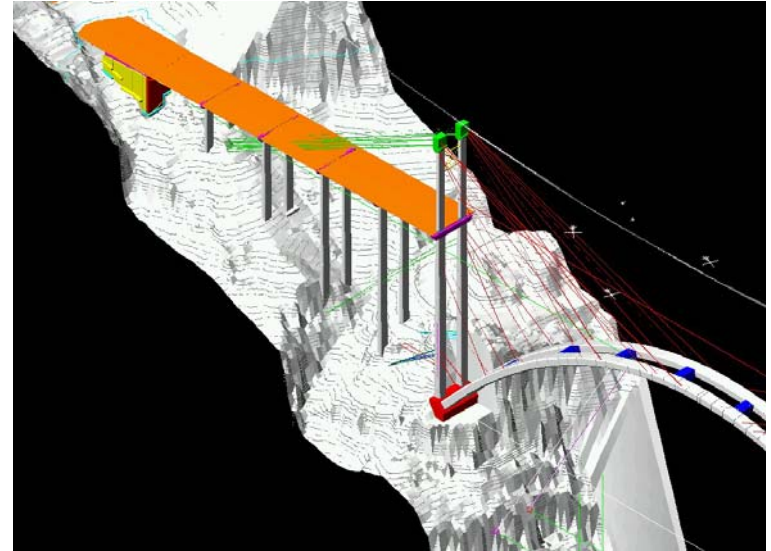
➤ ***Cast in Place Alternative***

- **Concrete quality and consolidation**
- **Geometry Control**



Challenge - Arch and Girder Erection

- ***Every step engineered***
- ***Every step evaluated***
- ***Forecast and tuning***
 - ***Cable-stayed technology***
- ***Wind is Critical***





Construction and Contracting Strategies

- ◆ ***Phase project to match incremental funding***
- ◆ ***Increase competition and value through price and work element placement***
- ◆ ***Diversify onsite/offsites and materials***
- ◆ ***Build on Successes- remove unknowns and risks as early as possible at every opportunity***
- ◆ ***Fairly analyze and allocate risks***
- ◆ ***Dedicate management team from concept through completion***

Construction Strategies Continued

- ◆ ***A plus B bidding (with minimum and maximum)***
- ◆ ***Lane rental with significant bonuses***
- ◆ ***Steel price adjustment clause (+/-10% float)***
- ◆ ***Cash flow planning with correlating items***
- ◆ ***Industry outreach at 60% and Pre - bid plan availability***
- ◆ ***Detailed Build estimate and schedule***
- ◆ ***Onsite E-O-R during key activities***
- ◆ ***Specialized responsibility factors with bid***
- ◆ ***Escrow Bid Documents***

QUESTIONS



www.hooverdambypass.org